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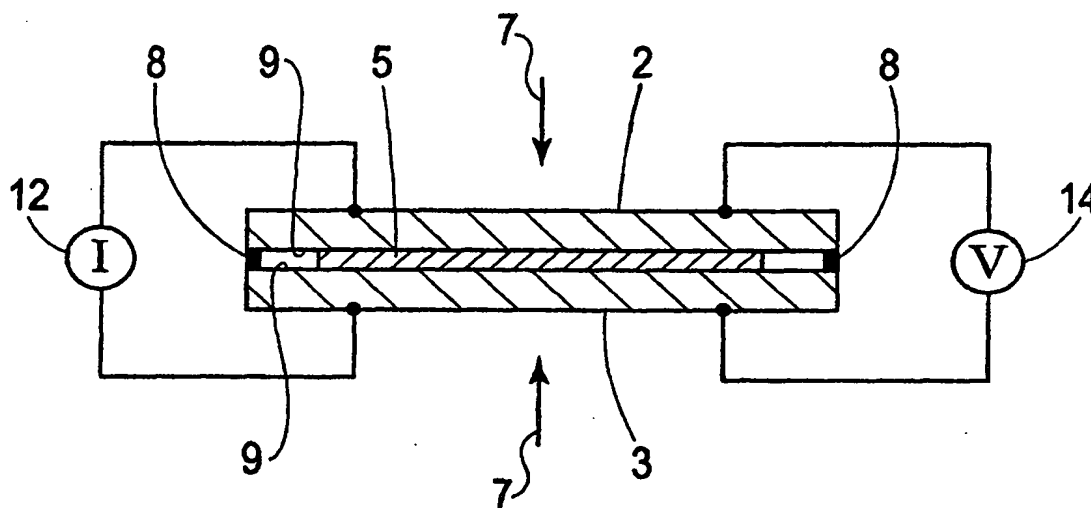
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(54) Title: ELECTRICALLY CONDUCTIVE CERAMICS



## (57) Abstract

A metal oxide ceramic material such as alumina or chromia which has been rendered electrically conductive through its thickness by the incorporation of silver into the material. The metal oxide ceramic material may be in the form of a layer on a substrate such as a bipolar plate or other component for a fuel cell assembly. The electrical conductivity may be achieved by heating the ceramic material and a silver-containing material in contact with each other to at least 750 °C such that silver migrates from the silver-containing material into the metal oxide ceramic material and creates electrically conductive pathways through the ceramic material. In a particular embodiment, the substrate is a steel which forms an alumina, chromia or alumina-rich or chromia-rich surface layer in oxidising atmosphere and the silver-containing material is heated in an oxidising atmosphere in contact with the steel to cause the surface layer to form on the steel and to cause silver from the silver-containing material to occur in and create the electrically conductive pathways through the layer. The silver-containing material may be commercially pure silver or other forms of silver.